

Notes on the Feeding Habits of Adult Chrysopidae (Neur.).

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All of the statements that I have been able to find concerning the feeding habits of adult Chrysopidae agree that "in the adult stage the insects feed little, or not at all."¹ This quotation, from Dr. J. B. Smith, refers to the genus *Chrysopa*. Howard informs us similarly that the adult *C. oculata* "does not feed,"² and Wildermuth, in his recent paper on the California Green Lacewing Fly,³ states that "neither sex has ever been noted by the writer to feed in the adult stage, even when food was offered, and doubtless all of the lacewing flies take little or no food in this period of their existence."

In the summer of 1916, in Glastonbury, Connecticut, the writer had occasion to keep in confinement many adults of *C. oculata* for the purpose of procuring eggs for embryological studies. The observation of these insects has afforded conclusive evidence contradicting this prevalent statement.

A large scarlet aphid common in New England, on the stems of Golden Glow (*Rudbeckia laciniata*), having been introduced into the cage, the smaller specimens were vigorously attacked by the chrysopids. The prey was grasped in the mandibles by the end of the abdomen, the juices sucked and the skin completely eaten. One female, while under observation, ate three aphids in rapid succession, but refused more food. These adults also drank from drops of water. When apple leaves were put in the cage, the insects ran over them rapidly, with their heads almost touching the leaves, as if searching for small insects or eggs.

Adults of both sexes, soon after being collected, or a few hours after feeding, were often observed to discharge black pellets from the anus, which appeared to be animal matter, as

¹ John B. Smith, Sc.D., Economic Entomology, p. 74.

² L. O. Howard. Insects, p. 225.

³ V. L. Wildermuth, California Green Lacewing Fly. Journal of Agricultural Research, Vol. 6, No. 14, 1916.

viewed with the microscope, so finely ground and digested, however, that no tissue was distinguishable.

After a few days of confinement without food or water, females invariably died a premature death, with many eggs in the abdomen unlaidd, whereas fed females usually laidd all, or nearly all, of their eggs.

Unfed females were observed to extract eggs from their own abdomens with their mandibles, and to devour them rapidly one after another. The performance of this operation by one individual was witnessed three times in less than one minute. Only those insects which had been confined without food and water for a few days were seen to resort to this source of nutriment. In several instances, females were seen trying to extract eggs in this manner without success, the eggs being, presumably, too far within the vagina to be reached by the mandibles.

Since this egg-eating habit is displayed only by unfed individuals, it is concluded that hunger is the chief stimulus to this reaction. Scarcity of food for adult Chrysopidae may have been of sufficiently frequent occurrence in the past to account for the development of the preservative instinct exhibited by the females, of eating the eggs. This instinct, however, does not permit the insect to subsist on its own eggs until its abdomen is emptied of them, as evidenced by the fact of death by starvation with many eggs still in the abdomen. The rate at which eggs are available for extraction by the mandibles is not sufficient to satisfy the demands for nutriment; however, when food is scarce, this egg-eating habit is doubtless of great preservative value in allowing the females to subsist from one meal of insects to another.

To summarize: (1) Adults of both sexes feed upon smaller, soft-bodied insects, drink water and discharge solid excrement. (2) Unfed females die of starvation, leaving a large portion of their eggs unlaidd. (3) Females on the point of starvation eat their own eggs, extracting them from the abdomen as frequently as they are available—a preservative instinct.

Thus Chrysopidae are of even greater economic importance

than has been known, since the useful work of the notoriously predaceous larva is supplemented by the predaceous work of the adults. In the struggle for existence, however, the position of this family is decidedly less advantageous than formerly supposed, inasmuch as, not only the larval food, but also the amount of food available for the adult insect, is an important factor in determining the number of individuals.

A Species of *Macrotracheliella* found in New England (Hemip., Anthocoridae).

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While examining not long ago some unmounted insects belonging to the Boston Society of Natural History, I found an Anthocorid bug unlike anything I had previously seen. I sent it with some other doubtful specimens to Mr. O. Heidemann, who returned it without comment as "*Macrotracheliella* sp.," another instance of my friend's well-known acumen and willingness to give others the benefit of his great knowledge of the Hemiptera. This genus was founded by Champion in the *Biologia*¹ to contain a new species, *M. laevis*, of which he had examples from Mexico and Panama. The occurrence of a very closely related species in New England is one of those troublesome facts of distribution which every now and then arise to confront us with our profound ignorance of what is or has been really going on, notwithstanding our theories of zones, soils, land-bridges, and so forth.

The specimen at hand agrees in every particular with Champion's generic diagnosis but differs from *M. laevis* in certain characters of specific value. For those who do not have access to the *Biologia* it may be of service to present the chief characters of the genus, especially as it has not been reported hitherto as occurring in the Nearctic region.

MACROTRACHELIELLA Champion.

Anterior lobe of pronotum narrow and conical forming a continuous outline with the elongated cylindrical basal part of

¹Biol. Cent.-Am., Ins., Rhynch. II., p. 322, Tab. 19. figs. 21, 22, 22a.